

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. - 27. (canceled).

28. (currently amended): A method of producing a glass substrate for a mask blank, comprising the steps of:

carrying out a rough polishing step for roughly polishing a main surface of the glass substrate;

~~etching the main surface so as to (1) remove between 0.01-0.20 μ m of glass from the main surface and (2) increase a size of a defect which remains on the main surface of the glass substrate to a width of 0.2 μ m or more~~ of the glass substrate, after the rough polishing step;

~~carrying out a precision polishing step on the main surface of the glass substrate with a predetermined polishing-off amount~~ of precisely polishing the main surface of the glass substrate after the etching step;

inspecting a defect on the main surface of the glass substrate after the precision polishing step;

~~the etching step being for magnifying the defect on the main surface of the glass substrate to the extent that the defect can be detected during the inspecting step;~~

~~the inspecting step being carried out by monitoring inspecting the main surface mirror-finished by the precision polishing step and the defect that is located in a position deeper than the predetermined polishing-off amount and that is elicited by the etching step and remains after the precision polishing step~~

wherein, when a crack which is extended in a depth direction of the main surface of the glass substrate is present, the etching step is for magnifying, in an in-plane direction, the crack which is left after the precision polishing step;

wherein the precision polishing step is for flattening the main surface of the glass substrate subjected to the etching step; and

wherein the inspecting step is for inspecting whether or not the crack magnified in the in-plane direction is present on the main surface of the glass substrate.

29. (new): A method of producing a glass substrate for a mask blank as claimed in claim 28, wherein the crack is magnified in the etching step by 0.2 micron meter in the in-plane direction.

30. (new): A method of producing a glass substrate for a mask blank as claimed in claim 28, wherein the main surface of the glass substrate after the precision polishing step has a surface roughness of 0.2 nm or less in terms of the root mean square roughness (RMS).

31. (new): A method of producing a glass substrate for a mask blank, as claimed in claim 28, wherein the glass substrate is formed by quartz glass.

32. (new): A method of producing a glass substrate for a mask blank, as claimed in claim 28, further comprising:

a step of cleaning the main surface of the glass substrate after the precision polishing step.

33. (new): A method of producing a glass substrate for a mask blank, as claimed in claim 32, wherein the main surface of the glass substrate after the cleaning step has a roughness of 0.2nm or less in terms of the RMS.

34. (new): A method of producing a glass substrate for a mask blank, as claimed in claim 32, wherein the cleaning step uses a solution having an etching function as a cleaning solution and the cleaning step is carried out under a condition that causes the glass substrate to be removed by more than 0 micron meter and below 0.01 micron meter by etching.

35. (new): A method of producing a glass substrate for a mask blank, as claimed in claim 28, wherein the defect inspection step is carried out by a visual inspection.

36. (new): A method of producing a glass substrate for a mask blank, as claimed in claim 28, wherein the etching step removes the main surface that is subjected to precision polishing by 0.01 to 0.2 micron meter.

37. (new): A method of producing a glass substrate for a mask blank, as claimed in claim 28, wherein the precision polishing step is carried out so that flatness required in a selected one of ArF laser, F2 excimer laser, and EUV is accomplished.

38. (new): A method of producing a glass substrate for a mask blank, as claimed in claim 28, wherein the rough polishing step is carried out by using cerium oxide as abrasive particles while the precision polishing step is carried out by using colloidal silica as the abrasive particles.

39. (new): A method of producing a glass substrate for a mask blank, as claimed in claim 28, wherein the etching is an isotropical etching.

40. (new): A method of producing a glass substrate for a mask blank, as claimed in claim 28, wherein the etching is executed at an etching rate between 0.2 nm/min and 2 nm/min.

41. (new): A method of producing a glass substrate for a mask blank, as claimed in claim 28, wherein the etching step is carried out on the condition that an amount of a turned-down edge of the glass substrate falls within a range between -2 micron meters and 0 micron meter.